

## CLAIM OR CLAIMS

1. A compact head up display for a firearm, comprising:
  - (a) a base for cooperatively engaging the firearm;
  - (b) a transmissive diffractive optic mounted to the base;
  - (c) a coherent illuminating beam source for illuminating the diffractive optic;
  - (d) a power source selectively connected to the coherent illuminating beam source;
  - (e) a light valve optically intermediate the diffractive optic and the coherent illuminating beam source; and
  - (f) an image generator connected to the light valve for creating an image on the light valve.
2. The compact head up display of Claim 1, wherein the diffractive optic is a hologram.
3. The compact head up display of Claim 1, wherein the diffractive optic is tilted with respect to the axis of the coherent illuminating beam source.
4. The compact head up display of Claim 1, wherein the diffractive optic is a hologram having a recorded image of an infinitely spaced focal plane.
5. The compact laser sight of Claim 1, wherein the light valve is a liquid crystal diode.
6. The compact head up display of Claim 1, wherein the image appears as a reconstructed image at a plane located from adjacent the user to infinity at infinity.
7. The compact head up display of Claim 1, wherein the coherent illuminating beam source light valve is a laser.
8. The compact head up display of Claim 1, further comprising a range finder cooperatively connected to one of the image generator and the light valve for incorporating range information into the image.
9. The compact head up display of Claim 1, further comprising an optical surface illuminated by the coherent illuminating beam source to form a targeting beam of coherent light.

10. A compact head up display for firearms, comprising:
  - (a) a transmissive hologram mounted relative to the firearm;
  - (b) a laser for illuminating the hologram; and
  - (c) a light valve optically intermediate the hologram and the laser.
11. The compact head up display of Claim 10, further comprising an image generator connected to the light valve for creating an image on the light valve.
12. The compact head up display of Claim 10, wherein the transmissive hologram is moveable connected to the firearm between a closed position and an open position.
13. The compact head up display of Claim 10, further comprising one of a passive and active night vision system operably connected to the light valve.
14. The compact head up display of Claim 10, further comprising a range finder operably coupled to the light valve.
15. A method of sighting a firearm, comprising:
  - (a) illuminating a diffractive optic mounted to the firearm with a coherent illuminating beam, the illumination beam including data acquired from a light valve, optically ahead of the diffractive optic.